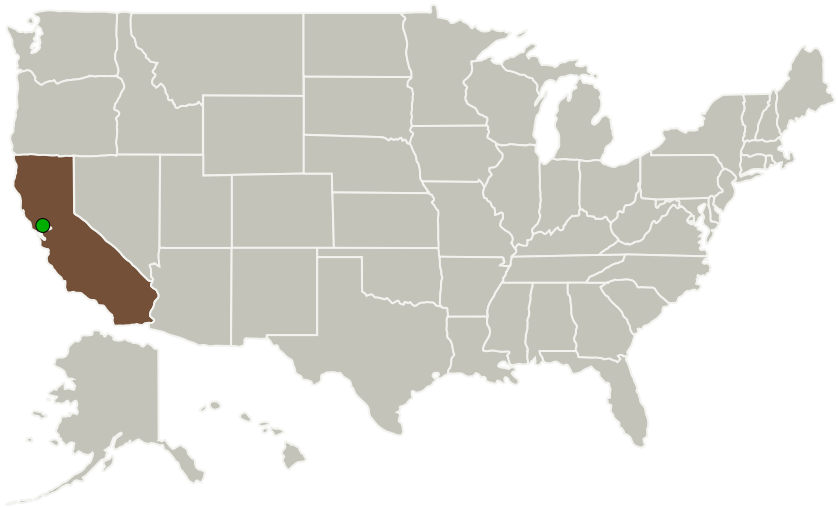
Recovery of In-Space Cubesat Experiments (RICE), Phase I

Completed Technology Project (2010 - 2010)

Project Introduction

ELORET Corporation, in collaboration with the Space Systems Design Laboratory of Georgia Institute of Technology, proposes developing and demonstrating a capability/technology to de-orbit small payloads (approximately 1 kg) from Low-Earth Orbit and returning them to Earth safely. To achieve this goal, the current proposal has five objectives and associated tasks: 1. Surveying the Bio-science communities to define requirements for the first generation mission architecture. 2. Understanding the launch interface requirements such as mass, volume, vibro-acoustic loads, electromagnetic interference (EMI), etc. 3. Designing and developing the first generation of mission architectures including the key aspects of launch, in-space operation, entry trajectory analysis (EDL sequence), and landing/recovery. 4. Understanding and quantifying small spacecraft requirements for power, thermal control, communications, propulsion, etc., and developing the preliminary design of the spacecraft system using off the shelf technologies whenever possible. 5. Designing and developing a passive (i.e., without any chemical or aerodynamic deceleration devices), single-stage ballistic entry system (including the aeroshell). 6. Designing and developing the impact energy absorption system and thermal control system required for payload thermal management and survivability upon landing.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
ELORET Corp.	Lead Organization	Industry	Sunnyvale, California
Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations
California

Project Transitions

January 2010: Project Start

July 2010: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139393)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

ELORET Corp.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

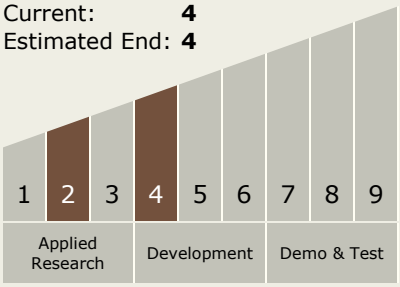
Carlos Torrez

Principal Investigator:

Dinesh Prabhu

Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX09 Entry, Descent, and Landing
  - TX09.1 Aeroassist and Atmospheric Entry
    - TX09.1.1 Thermal Protection Systems

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System